

REMARKS

Applicant's representative wishes to thank Examiner Abraham for the courtesy of a personal interview on June 5, 2004, during which the proposed amendment was discussed.

In the Office Action of September 4, 2004, Claims 6, 7, 12, 19, 30, 31, 35, 37 and 38 were rejected. No claim was allowed. In response, Claims 19, 30 and 35 are canceled and Claims 6, 7, 12, 31 and 38 are amended. Reexamination and reconsideration are respectfully requested in view of the following remarks.

Rejection of Claims 6, 7, 12, 30, 31, 35, 37 and 38 under 35 U.S.C. §103(a) over Yamazaki et al '368

Claims 6, 7, 12, 30, 31, 35, 37 and 38 were rejected under 35 U.S.C. §103(a) as being obvious over Yamazaki et al (U.S. Patent No. 6,348,368). The Office Action alleges that Yamazaki discloses a crystallized active transistor layer with grains joined by (111) twin boundaries and teaches that the plane orientation of the crystal in the lattice can be arranged to be (110). The Examiner further alleges that Claim 3 of the reference includes Pb as a possible catalytic agent to transform amorphous material into a crystalline material. The Examiner further alleges that a gate electrode is mounted on the active layer via gate insulation layer since the product is TFT. The Examiner alleges that it would have been obvious to conclude that the patent reads on the claimed invention by virtue of device material and device characteristics similarities.

The Examiner further alleges that although the patent omits to disclose the claimed "alloys" of the agents as part of the agents, claim 3 indicates the possible existence of other associated materials or alloys with the agents by the expression

“at least one selected from” to indicate material types associated with the agents. Therefore, the Examiner takes the position that it would have been obvious to one skilled in the art to conclude the existence of agent alloys in the crystallized TFT layer. As for claims 6, 7, and 38, the Examiner alleges that the crystallizing agents of Yamazaki are oriented parallel to the substrate and that the claimed insulating substrates are also most common substrates in TFT formation. Further, the Examiner alleges that the plane orientation with {111} crystal-oriented layer is taught to be {110}. As for the claimed layer thickness or general layer dimension, the Examiner alleges that this is notoriously known as one of the most common variables that differ from a design to another based on an expected result. The Examiner further alleges that the specification provides no disclosure of either the critical nature of the claimed arrangement or any unexpected results. The Examiner further alleges that as for the mobility of the active layer, the element is variable and heavily dependent on doping profile and concentration of crystallizing agents. Regarding claim 7, the Examiner alleges that the crystal grains in the active layers of the cited references are not restricted to a defined number and that therefore, it is clear that the claimed number of crystals is also covered in the references. Regarding Claim 12, the Examiner alleges that since currents in TFTs travel through the channel, and that the channel is the crystallized TFT with the claimed crystal orientation, the claimed operation is met by the prior art. Further, the Examiner alleges that although the exact terminologies as that of the claim such as “dendryte” are not used, there are crystallized regions in the active layer of the prior arts. Regarding Claim 30, 31 and 35, the Examiner alleges that the expression “seed crystal metal” is understood to be any metallic material and that the source/drain electrodes are formed on the insulating substrates of both references and between

adjacent gate electrodes of adjacent TFTs. Regarding Claim 37, the Examiner alleges that the claimed crystal orientation and angles are taught in column 14, lines 35 - 65.

In response, Claims 30 and 35 are canceled and Claims 6, 7, 12, 31, 37 and 38 are amended to provide that in the device, there is a current path between the source and drain that is made up only of {110} surface grains. This limitation is supported, for example, on pages 13 - 15, wherein it is described that there is at least one current path between the source and drain that is formed of a plurality of crystal grains that are joint with the twin crystal boundary. This limitation is neither taught nor suggested by Yamazaki.

Further, as discussed in Applicant's previous response, Yamazaki does not distinguish between a {110} surface and a {200} surface and discloses only one kind of {111} twin boundary, whereas the present invention discloses several kinds of twin-boundary structures, as shown in Fig. 1B, Fig. 2A - 2C, Fig. 2D - F and 2G.

Accordingly, it is respectfully submitted that Claims 6, 7, 12, 30, 31, 35, 37 and 38 would not have been obvious over Yamazaki.

Rejection of Claim 19 under 35 U.S.C. §103(a) over Yamazaki '368 in view of Yamazaki '723

Claim 19 was rejected under 35 U.S.C. §103(a) as obvious over Yamazaki '368 in view of Yamazaki (U.S. Patent No. 6,462,723). This rejection is moot because of the cancellation of Claim 19.

Conclusion

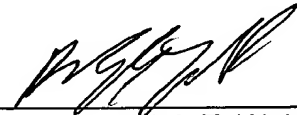
In view of the foregoing amendments and remarks, it is respectfully submitted that Claims 6, 7, 12, 31, 37 and 38 are in condition for allowance. Favorable reconsideration is respectfully requested.

Should the Examiner believe that anything further is necessary to place this application in condition for allowance, the Examiner is requested to contact applicants' undersigned attorney at the telephone number listed below.

Kindly charge any additional fees due, or credit overpayment of fees, to Deposit Account No. 01-2135 (520.39251X00).

Respectfully submitted,

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